NON-PUBLIC?: N
ACCESSION #: 8807250371
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Indian Point Unit No. 2 PAGE: 1 of 4

DOCKET NUMBER: 05000247

TITLE: Reactor Trip on Main Boiler Feed Pump (MBFP) Trip
EVENT DATE: 06/17/88 LER #: 88-006-00 REPORT DATE: 07/15/88

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Jude G. Del Percio, Manager, Regulatory Affairs
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COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: SJ COMPONENT: V MANUFACTURER: C684
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On June 17, 1988, while the plant was at 100% power, an unplanned reactor trip occurred. A contract employee performing cleaning functions on the conventional side of the plant inadvertently depressed the manual trip button for 21 Main Boiler Feedwater Pump. During the subsequent attempted recovery from the loss of one feedwater pump the main generator tripped on high water level in 22 steam generator. The generator trip caused a main turbine, and subsequent reactor trip. The reactor protection system functioned normally and the public health and safety were not affected. The use of contract employees for cleaning in the vicinity of critical operating equipment at the station is being reviewed.

(End of Abstract)

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Plant System and Identification:

Westinghouse 4-loop pressurized water reactor

Identification of Occurrence:

Event Date: June 17, 1988

Report Due Date: July 17, 1988

Reference: Significant Occurrence Report 88-303

Past Similar Occurrences: Unit trip October 23, 1986 (LER 86-036)

Description of Occurrence:

On June 17, 1988, prior to 1222 hours, Unit No. 2 was operating at 100% reactor power. A contract employee was performing a general cleanup of the area in the vicinity of Main Boiler Feedwater Pump (MBFP) 21. He was not aware of the operational significance of the equipment he was working on or near and had been instructed to clean equipment other than, and which specifically did not include, the 21 MBFP control console. A passing Nuclear Plant Operator (NPO) noticed that the contractor was cleaning the speed control cabinet and directed him to stop, fearing possible changes to MBFP speed and a possible unit trip. The operator went to the NPO office to call the Central Control Room (CCR) to report the contractor's activity. The contractor moved away from the speed control cabinet as requested and moved on to cleaning the MBFP control console. He dusted the front of the panel, behind the plate that covers the manual trip button and then around and under the plate. He apparently inadvertently depressed the button which tripped the pump.

The 21 MBFP trip occurred at 1222 hours. Operators in the CCR received audible alarms and noted that the plant was not running back in load as they would have expected. The standby (22) condensate pump started on decreasing MBFP speed signal as designed. Unit load was manually reduced to 480 MWe. 22 MBFP speed automatically increased to 4700 RPM. The steam dump controls were placed in the pressure mode, 22 MBFP was placed in manual, and speed was increased to 5200 rpm and left in manual.

Level in each steam generator dropped to approximately 12% on average before turning. RCS pressure reached 2320 psig at its highest value. Operators noted the increasing level in 23 and 24 steam generators. At that time the operator placed 23 and 24 feed regulating valves in manual and began reducing feed flow to match reduced steam demand.

The level in 22 steam generator reached the high level trip set point (75%) prior to manual control being taken by the operator. This caused the main generator to trip at 1226:10. This tripped the main turbine which in turn tripped the reactor.

Following the trip of MBFP 21, speed for that pump dropped from approximately 4500 RPM to 0 then increased to 3600 RPM. This was later confirmed to be due to a discharge check valve failure on the tripped MBFP, allowing reverse flow and driving the tripped MBFP in the reverse direction.

Analysis of Occurrence:

Any event or condition that results in automatic actuation of an engineered safety feature, including the reactor protection system, is a reportable event. The reactor protection system and all safety related equipment functioned normally during this event.

In light of the circumstances surrounding the event (i.e. unqualified personnel working in the vicinity of critical plant equipment and the failure of the MBFP check valve), a review is being conducted in order to fully address all potential safety concerns associated with the conduct of work in and around critical equipment and with the check valve failure.

Cause of Occurrence:

The MBFP trip occurred due to personnel error during the performance of housekeeping activities. The subsequent operator and system performance as a result of the MBFP trip were not successful in preventing a reactor trip. Although not designed to preclude a reactor trip on loss of one MBFP, we have installed several features in IP-2 to minimize the impact of the loss of one pump and assist the operator in his response so that an unnecessary reactor trip can be prevented. This was done as part of IP-2's trip reduction program.

The operator actions in response to an inordinate decrease in feedwater flow due to a failure of the discharge check valve on the tripped MBFP were sufficient to preclude a reactor trip on low steam generator water level. However, the actions taken to prevent a low level steam generator trip exacerbated the transient which culminated in a high steam generator water level and subsequent automatic reactor trip.

Corrective Action:

The use of contract or other employees not familiar with the significance of cleaning in the vicinity operating equipment is being reviewed. The previously unlabelled MBFP trip button has been labelled and now is covered by a transparent removable cover which completely covers the button.

The event has been incorporated into the appropriate operator training, and simulator programs to review and reinforce the operators' understanding of the pertinent design features and to heighten their awareness of the effects of the failed MBFP check valve and its consequences.

The failed MBFP check valve was repaired and an evaluation of the design, including the development of a modification to preclude further occurrences, is being performed. The MBFP trip turbine runback circuit was tested.

ATTACHMENT # 1 TO ANO # 8807250371 PAGE: 1 of 1

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Vice President

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Telephone (914) 737-8116
July 15, 1988
Re: Indian Point Unit No. 2
Docket No. 50-247
LER 88-06

Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 88-06 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,
/s/ Stephen B. Bram

Attachment
cc: Mr. William Russell
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